von Ruck (Karl)

THE DETRIMENTAL EFFECTS OF OVER-EXERTION IN PULMONARY PHTHISIS.

Read before ~~the meeting of~~ the American Climatological Association, Denver, Colorado, September 25, 1890.

BY

KARL VON RUCK, M.D.,

ASHEVILLE, N.C.,

Director Sanitarium for Diseases of Lungs and Throat, Asheville, N. C.

REPRINTED FROM THE THERAPEUTIC GAZETTE, DECEMBER 15, 1890.

DETROIT, MICH.:
GEORGE S. DAVIS, PUBLISHER.
1890.

SURGEON GEN'L'S OFFICE 464 LIBRARY

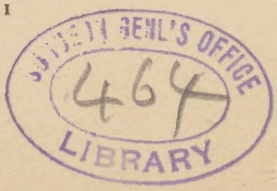
THE DETRIMENTAL EFFECTS

OF OVER-EXERTION IN

PULMONARY PHTHISIS.

INASMUCH as no material benefit can be expected from direct medication in the treatment of pulmonary phthisis, and inasmuch as success must almost entirely depend upon management, which may be called a hygienic and prophylactic therapeutics, I have, in pursuance of the latter, endeavored to study as closely as possible to what extent it is really capable to influence the course of the disease. In so doing I have had the advantage of being able to give my entire attention to the treatment of phthisis for some years past, during which a large number of cases have come under my care, both in private practice and in my special institution.

By the close association with patients it has been possible to observe the conditions under which they appeared to improve and recover, and also the apparent causes which led to reverses and relapses, some of which I had formerly failed to appreciate to their full extent.



It is now my purpose to point out in this communication one of the causes which I have found to exert the greatest influence upon the course of the disease, not only as an obstacle to favorable progress, but frequently leading to reverses, not again recovered from. I refer to physical and mental over-exertions and the thereby induced heart-fatigue.

Having found my patients so uniformly inclined to carry these beyond the limits of benefit and safety, and having seen more or less serious injury to follow such indiscretion most constantly, I am fully convinced that, if this cause alone could be eliminated, the cases of improvement and recovery would be increased in number more than one hundred per cent.; and I ascribe the better results obtained in my institution, as compared with those in private practice, in no small measure to the control in this matter which I am there able to exercise.

The cause for these constant indiscretions on the part of phthisical patients is apparent, and depends upon the fact that the more intelligent understand very well how little they have really to hope from the administration of drugs for the cure of their disease; and that they place their only hope in the out-of-door life and exercise which has been recommended most urgently by their trusted medical adviser; and so anxiously do they cling to this only chance, that any attempted limitation, of one or the other, is looked upon by them as a doubtful measure and with apprehension. Certainly, so long as they are able to follow a contrary course, they are most unwilling to

dispense, even only in part, with what is to restore to them their health. They can see no harm in taking in, as much as possible, of the air which will heal their lungs, by forced respiration, carried on purposely or produced by violent exercise, and the latter they feel sure will restore their former strength. This belief on the part of patients is, however, largely due to medical advice, in which out-of-door life is, as a rule, associated with exercise, without proper caution as to the latter; indeed, I know of eminent physicians having advised as much as possible of both, for patients who should at the time have kept their beds.

It is truly pitiful to see such patients literally drag themselves about, exhausting what little strength and recuperative power they may still possess; and more so yet, to see how, under the mistaken association of exercise with the necessary out-of-door life, their wasting becomes more evident from day to day, their steps less secure, their frames more stooping, their stopping "to catch breath" more frequent, and the hectic flush more distinct upon their sunken cheeks, until, finally, from utter exhaustion, or from resulting relapses and complications, they are obliged to keep to their house and room. But even here they resort to in-door gymnastics,—swinging dumb-bells or Indian clubs, or box against an imagined foe in the form of a suspended and inflated rubber air-bag or other contrivance calculated to offer resistance to their self-exhausting blows. Such sights are not uncommon in advanced cases, and the picture is only less painful in cases of the early

stage, because there is still a relative appearance of well-being; but, so long as they tax their strength to the utmost in violent exertions, the advanced stage is reached surely and steadily, although the pace may appear less rapid.

To illustrate the injurious consequences of over-exertion, I append notes from my case-books of a limited number of cases, some from my institution and others from private practice:

CASE I.—Gentleman; in early stage of pulmonary tuberculosis; had been free from fever for over five weeks, during which the pulse-rate had not been recorded above 88; he had gained eleven pounds in flesh, and his general condition, as well as the local state of his lungs, was highly satisfactory. He had thus arrived at a period where, by reason of consciousness of returning health, the tendency to over-exertion is particularly manifest. Contrary to his general directions, he exceeded the amount of exercise allowed him by a walk of over six miles, and returned much fatigued. He had no appetite for his next meal, and the record for the evening shows: Temperature, 100°; pulse, 120; respiration, 28. It was a week before his previous condition was restored, with a loss of five pounds in weight, which it took him a month to regain.

CASE II.—A young lady; in more advanced stage of pulmonary tuberculosis; active symptoms had been absent for four months, during which there was no fever; pulse-rate, 80 to 96; respiration, 22 to 24; appetite good; slight cough, and scant ex-

pectoration early in the morning; bacilli were still present in sputum. Her body-weight had reached one hundred and thirty pounds, which was more than she had ever weighed. At this time she ascended a neighboring mountain, and returned hurriedly on account of some fright. She arrived completely tired out, panting for breath, and with a pulse which could hardly be counted,—about 140. Within an hour she expectorated several mouthfuls of clear blood; the pulse continued between 112 and 120 for several weeks. On the third day febrile symptoms, with loss of appetite, appeared. During the month she lost eleven pounds of flesh, and did not regain her previous condition until three months thereafter.

CASE III.—Married lady; tubercular phthisis; had just passed through stage of softening in right upper lobe, but was now improving in all her symptoms, being, however, still forbidden all active exercise, for which massage was substituted. Believing herself strong enough and desirous for a change, she walked down-stairs and upon the piazza, and returned to her room within half an hour, when her temperature had risen 2½° F., and the pulse-rate had increased 30 beats per minute, above any record for three weeks previous. She had no appetite for several days; lost two pounds of flesh that week, whereas the week previous she had shown a gain of three pounds.

CASE IV.—Same patient; about two months later had made much further improvement; fever was now practically absent; pulse, 100; respiration, 18; had been allowed short car-

riage-rides with apparent benefit. Limited to half an hour on the present occasion, she was out two and a half hours, and also stopped in town for some shopping. She returned so tired that she had to be carried to her room. Chill occurred twenty minutes later; high fever and loss of appetite set in. She relapsed in every way, and never again reached the improvement at which she had arrived before this last ride.

CASE V.—Gentleman; in advanced stage of tubercular phthisis, with large suppurating cavity in right upper lobe. History of repeated hemorrhages, and a severe one just recovered from before his arrival. He resided a week in my institution, during which he gained in flesh; fever and pulse-rate had become less with every day, and his appetite improved correspondingly. Desirous of getting cheaper accommodations, he went to a boarding-house about one mile distant, and returned several times thereafter for advice, always on foot, and each time his pulse-rate was very rapid. In ten days he lost all he had gained, and he again returned to my house. Improvement occurred once more, so much that he believed himself much stronger in every way, and persisted in ascending the mountain in the rear, claiming that he enjoyed it and that it did not hurt him in the least. But upon every occasion I found his pulse-rate increased from 30 to 40 beats, and continuing so for a number of hours later. I was fearful of return of hemorrhage, which I held up to him as a likely occurrence, begging him to desist; but, although he promised, he took another trip

without my knowledge. Returning, he died of a violent hemorrhage, a few minutes after he had reached the house, and although at his side almost instantly, there was no time to render him any material aid.

CASE VI.—Gentleman; tubercular phthisis; entire right lung involved, with circumscribed breaking down in upper lobe. A moderate-sized cavity developed in the course of a month, during which time he had to keep his room most of the time. Although he had much fever and little appetite, he maintained his weight through this period. Improving thereafter rapidly, he was kept out of doors almost continuously, but his exercise was limited to repeated short walks upon the level grounds and to short carriage-rides. He soon began to extend his walks to distances of a mile or two, each time with slight return of fever and increase of cough and expectoration; and, as soon as he had recovered from one reverse, he was sure to produce another by his indomitable desire to take long walks, and no amount of remonstrance seemed to bring him to his senses, until I informed him that, unless he desisted, our relations as physician and patient would cease. At this time he had lost thirteen pounds of flesh, had regular evening fever, with a continuously rapid pulse and profuse expectoration. Henceforward we had no further trouble, and as by returning improvement he recognized his previous folly, he became not only a most exemplary patient, but grew actually timid, so that I had frequently occasion to urge him to increased physical exertion.

CASE VII.—Young lady; in beginning of advanced stage of pulmonary tuberculosis, with a tendency to get into trouble if there was an opportunity ever so remote; had many slight relapses from mental and physical over-exertion, but, after many trials, permanent arrest, after a year's residence in my institution, was finally obtained. General health was good and local symptoms were absent, but her endurance seemed still to have a limit. As she was about to be discharged, I gave my consent to horseback exercise, for which she had long besieged me, this time rather to make a test, as she was sure to take it up on her return home. No harm resulted until she exceeded the limit of one hour, and stayed out all forenoon, in company with another patient, and, from what I learned, the ride was rather a wild chase than one for health. It resulted in immediate loss of appetite, sense of fatigue and malaise, and increased pulse-rate for several days, during which she lost several pounds of flesh; menstruation occurred a week in advance, and altogether it delayed her discharge for nearly a month.

CASE VIII.—Young lady; in early stage of tubercular phthisis, without active symptoms for a month past; accompanied the patient whose imprudence I have just related. Being an inexperienced rider, she was limited to half an hour, and several such short rides taken previously had appeared beneficial. She was at this time gaining in every respect. She did not come off as easily as her companion. On her return she seemed utterly exhausted. Active symp-

toms occurred at once, which confined her to her room the greater part of the day for several weeks. Physical examination showed extension of the disease. She lost six pounds of flesh, but made up her relapse, during the month following, when she returned home for the summer.

CASE IX.—Gentleman; with tubercular phthisis past the early stage; had resided in my institution several weeks, and had followed advice conscientiously and with benefit, as he was evidently improving. One morning he retired to his room after breakfast, and engaged in letter-writing until noon, by which time he reached a temperature of 102° and a pulse-rate of 130; could not eat his dinner, and felt very tired all the rest of the day. Next morning he expectorated several bloody coagula, and it took a week before he felt as well as before, during which time he lost two pounds in flesh. The week before he relapsed his temperature had only once reached 100° F., and the highest pulse-rate recorded was 96; his appetite had been good, and his weight had increased two pounds. He told me on another occasion that he had not believed the letter-writing to be the cause of his relapse, and therefore tried it once more, and, excepting the bloody expectoration, with almost identical results; and I found in his case that, even a game of cards or prolonged, animated conversation, had a similar, although more transient, effect.

CASE X.—(*From private practice.*)—Lady; with chronic pneumonia, in somewhat advanced stage. She believed in plenty of out-of-door life and exercise, and her house

physician had so ordered. Under regular horseback exercise on every fine day (and we have on an average about twenty-five in each month), or long walks instead, she had lost twenty-two pounds of weight in the three months she had been in Asheville. Her temperature at the time she consulted me reached 103°, with a pulse of 120 to 130; cough, expectoration, and night-sweats kept her restless at night, and she was very much discouraged. By my advice she restricted her physical exercise to short walks and carriage-rides, and, beyond some treatment for nasal stenosis and pharyngeal catarrh, and the regulation of diet, no other change was made in the management of her case. After a month she had gained eight pounds, her temperature and pulse-rate were much less, and she expressed herself as feeling better in every way. Three months later she returned home greatly improved, having made a gain of twenty-seven pounds in flesh from the time she came under my care, with disappearance of râles in the affected lung, and almost entire subsidence of cough and expectoration.

Case XI.—(*From private practice.*)—Lady; with tubercular infiltration of right upper lobe and moderate deposit in left ary-epiglottic fold. She consulted me on account of growing constantly weaker and having much fever, and desired to know of a more suitable climate for her particular case. I found she lived in a boarding-house a mile out of the city, and to get proper exercise and keep up her strength she walked that distance once and often twice a day. I persuaded her to place herself under

more favorable conditions, and she entered my institution soon thereafter, where her larynx received some attention, and her exercise and diet were properly regulated. Before she left Asheville—two months later—she had made remarkable improvement, which had begun immediately upon her admission. She could walk several miles without injury, had gained her former weight, was free of fever, and, as she expressed it, felt well enough to go home. Bacilli had been absent in the slight expectoration at the last two examinations made.

CASE XII.—(*From private practice.*).—Gentleman ; with tubercular phthisis ; entire right lung involved, with slight excavation in upper lobe. Called upon me on account of continuous loss of flesh and strength, and almost daily bloody expectoration. He had lost fourteen pounds in the six weeks since he had left home, had high temperatures and rapid pulse, frequently vomited his food on account of severe cough, and was very much discouraged. His physician had advised him to go to Asheville, let doctors alone, get on a horse and ride through the country if he wanted to save his life ! He had followed this advice, and was unwilling to give it up, and although he now only rode three or four hours a day, he was worse after a month, during which he consulted me several times. He had lost six more pounds of flesh, and an acute pleurisy now laid him up and for the time stopped his folly. After partial recovery, he confessed himself willing and ready to do whatever I thought best for him, and he kept his word. Neither had we any further trouble. He im-

proved thereafter steadily, and returned home with his cavity cicatrized, all râles had disappeared, he had gained nine pounds in flesh, cough and expectoration much improved, and without ever again having mounted a horse, but able to walk a mile or two without fatigue or injury.

I could now go on and relate many more such cases, more or less striking, but all showing the same relation of over-exertion to unfavorable progress. In my practice I am now most unwilling to abandon inquiry for this indiscretion, when relapse occurs that is not otherwise referable, and any physician who cares can make similar observations for himself. To do this requires, however, the careful keeping of records, of frequent observations of temperature, pulse-rate, respiration, cough, and expectoration, conditions of digestive organs, body-weight, etc., and also of the local findings of frequently-repeated physical examinations, but these data in private practice are seldom attainable on account of the amount of professional attendance required, which few practitioners are able to give and fewer patients would be able to appreciate.

I have frequently been asked why it is that over-exertion is so particularly harmful in the chronic affections of the respiratory organs, not only by patients, but also by professional friends, and physicians who were my patients, some of them maintaining that sufferers from other chronic diseases are not liable to reverses from similar causes. Less close observers, or such who had perhaps given the matter little attention, have even claimed

this for phthisical patients also ; and, indeed, the relation is not always so strikingly apparent as to invariably attract attention, especially in private practice, where we see our patients infrequently, and, as a rule, are only called or consulted after the relapse, and when our inquiry (if we make it) elicits only the patient's views in the matter. Frequently we concern ourselves most with the present condition and its relief. Especially in a busy practice, we are apt to pay less attention to inquiries into preventable causes than we really should. At any rate, I freely confess that, before I was interested in this work as I now am, I allowed myself to be satisfied with the explanation that the patient had taken cold, or with the supposed natural downward tendency of the disease, and it seems strange to me now that the great importance of this matter escaped my attention for so many years of my earlier practice. I know now that relapses from taking cold occur infrequently, and that the supposed downward tendency does, in fact, exist in a diminutive fraction of cases only, in which the disease runs an unusually acute course ; but that, on the contrary, there is a strong tendency to repair, improvement, and recovery in the great majority of chronic cases, even in such who are well advanced in the disease.

If phthisical patients are, however, more liable to reverses from over-exertion than others (and closer observation may show such liability to exist in sufferers from other affections also, and is known to exist in certain diseases of the circulatory organs), the

accounting seems not difficult ; for we find a good explanation in the effect upon the right side of the heart, and the lesser circulation, of any exercise which increases the heart's action and causes a greater demand for aerated blood by the tissues through the systemic circulation. In the presence of obstruction to a free blood-current through the lungs, by reason of impaired expansion, inflammatory and tubercular deposits, connective-tissue proliferation, cicatrization and retraction, accumulated secretions, and other causes for pressure upon the pulmonary vessels ; the right heart and large venous channels become thereby overloaded, and lead to exhaustion, more or less permanent, of the heart-muscle, and to subsequent degenerative processes in the muscular fibres.

Even sudden dilatation is liable to occur, and I have witnessed such a case (now to me plainly referable to over-exertion) which proved rapidly fatal.

The non-resistance of lung-tissue to tubercular invasion and extension, if not produced, is certainly favored by nutritive disturbances due to anæmia, and the frequently-associated small and weak heart, and either is apt to be preceded as a primary cause, or attended as a result, by dyspepsia and other gastric complications. Thus a good circulation goes with good digestion, and *vice versa*. We all know how much more favorable the prognosis may be in a given case, where, other things being equal, we have a good heart with good digestion, as compared with one in which all our efforts to secure these advantages prove ineffectual ; and we also know how we would

avoid any medication or treatment which influences one or the other for the worse as scrupulously as we would maintain it, if it kept the heart and digestive functions at their best.

All my cases show that the heart's action is seriously affected, sometimes for weeks, by such over-exertion, and that with it the appetite is lost and loss of flesh occurs most regularly, and it is, therefore, not to be denied that with frequent repetition of this cause the downward course, formerly attributed to the natural tendency of the disease, is by right referable to mistaken self-management or want of control by the professional attendant in a great many cases, who make unnecessary shipwreck in their journey for health, both at home and at health resorts.

Furthermore, if Metchinkoff's observations continue to stand uncontradicted, and the leucocytes are primarily instrumental in the destruction and removal from the organism of the infecting bacilli, thereby limiting and preventing their extension to healthy tissue, we can see that in tubercular disease any hinderance to the circulation must of necessity diminish the number of the so-called phagocytes able to reach the affected part or the line of defence, which for the time being becomes less efficiently guarded, and allows of greater proliferation, activity, and extension of the germs, with the accompanying production of leucomaïnes and inflammatory reaction.

But let the explanation be whatever it may, clinically I have experience which to me admits of no more doubt that heart-fatigue is

seriously detrimental to phthisical patients than I have of the known action of opium or chloroform, or of the relation of the bacillus of Koch to tubercular disease; and I only wish that I knew what more I could say or do, or that I might possess sufficient eloquence and power to convince, so as to impress upon the mind and conscience of every physician who advises and treats phthisical patients the great importance of its prevention. And I am equally convinced that if I so succeeded, I should have contributed more to the successful treatment of consumption than has been done by any advance made in this field of therapeutics for many a year past.

Error in the opposite direction is, however, also possible, although not fraught with a corresponding amount of danger; and I certainly do not wish to be understood as under-estimating the benefit of the rational employment of exercise in the management of phthisis, especially in conjunction with out-of-door life. I only protest against its abuse.

Nothing could be further from my mind than to recommend absolute rest and inactivity, unless during the existence of high fever, acute processes, and certain complications. I believe exercise, short of amounting to fatigue, is highly beneficial to the best circulation, nutrition of tissues, and elimination of waste products, and the want of such to be justly looked upon as a predisposing factor in the acquirement of disease.

Whenever I am obliged to dispense with it, I substitute massage, the use of the faradic

current, or both, and with much benefit. The mental faculties, too, require proper exercise, by light instructive study and literature, innocent and non-absorbing social games, conversation, enjoyment of natural scenery, music, etc., which are indispensable to the proper diversion of the patient's mind.

The amount of physical and mental exercise must, however, be carefully regulated for each patient, and must remain within the limits of safety at all times. The advice must not be given in a general way, but according to the circumstances of the case, the day, or even the hour. What one patient may do with benefit may prove harmful to another, and what is a proper amount of exercise at one time may lead to disaster under conditions of fever, the presence of complications, etc. It is always best to begin with a minimum, and to gradually test the patient's reaction by observations of pulse, temperature, appetite, and loss or gain in flesh; and the physician, in an institution, must have tact enough to do that for himself at opportune times. The patient is hardly ever to be burdened with the responsibility, and in private practice it requires the competent supervision of a nurse or attendant, without which we had, as a rule, better forego the information; for most patients become nervous and timid from such exact knowledge, and I can imagine no more miserable state of feelings and apprehension for the consumptive patient, especially when a physician works himself up too, who at all times and opportunities has his fever thermometer under his tongue and his finger upon his radial artery; and I have

frequently been obliged to demand the surrender of the former and cessation of pulse-counting to make any progress at all.

Mr. President, I know that most, if not all, members of this Association share my views, and I present this communication not so much for instruction of the eminent men here assembled, but rather that by their public approval the profession at large may thereby be more ready and willing to take cognizance of a preventable and serious obstacle to the more successful management of a disease, the prevention and successful treatment of which is one of the chief objects of the labors of this Association.